Turning GIS Spatial Data Into Operational Knowledge

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Geographic Information Systems (GISs) Can Significantly Impact Environmental Operations

- Once viewed as database archives with spatial attributes and excellent mapping capabilities, they are now employed in wider applications
- Environmental operations inherently spatial
- GISs have become less expensive and more accessible (ESRI, Intergraph, MapInfo, etc.)
- Applications summary:
  - Data Fusion, Links to Predictive Models, and Real-Time Decision Support

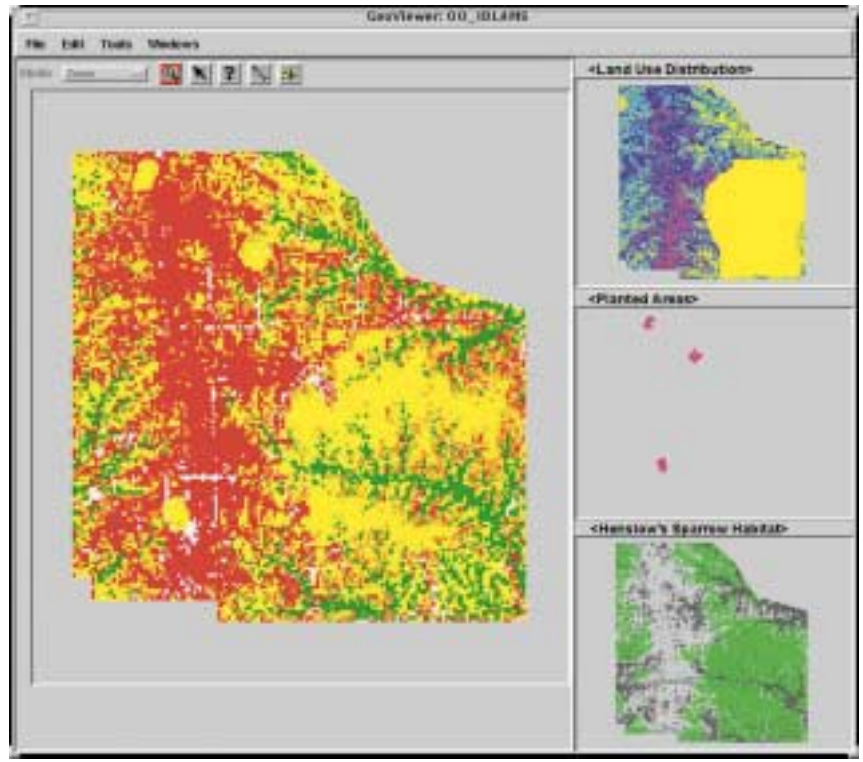
GIS for Data Fusion

- Overlaying attribute layers provide a powerful means to visualize relationships
- GIS tools to query, establish buffers, etc. support analyses
- Provides incentive to integrate environmental data with other installation, operational, and regional spatial data

Aerial photography of an Aberdeen Proving Ground site superimposed with GIS infrastructure (yellow), bald eagle habitat suitability model results (green), bald eagle nest locations (red), and 500 meter buffers around bald eagle nests (red hatched areas).

Links to Predictive Modeling

- Advantages of linking GIS to predictive modeling
  - GIS provides spatial input data for modeling
  - Facilitates display of spatial results of modeling
- Presently linkages are not standardized and can require significant programming
- Benefits can be great, so efforts continue to improve linking

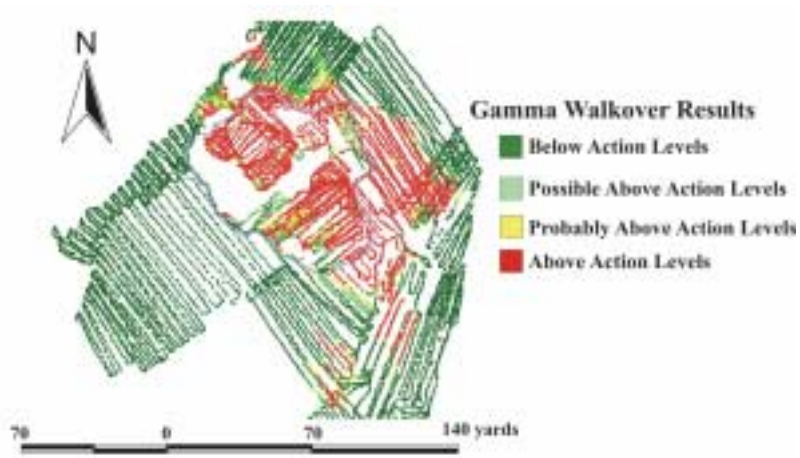


OO-IDLAMS dynamically models vegetation, land use, land management and wildlife habitat for Fort Riley, Kansas.

Real-Time Decision Support

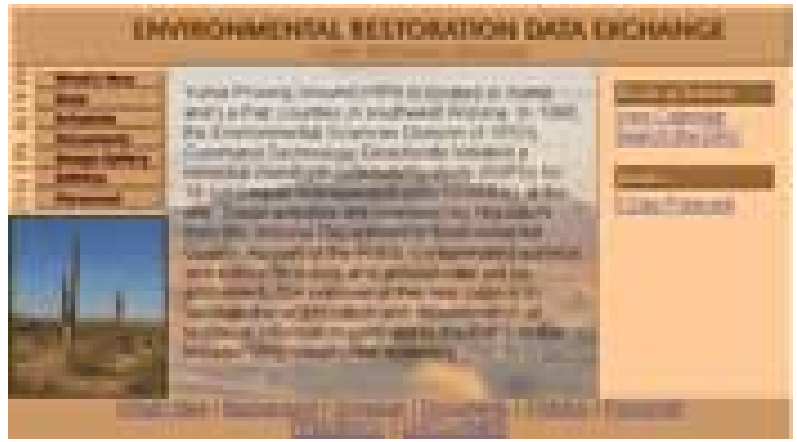
- Spatial information may become available only as an operation proceeds and then provides the basis for further action
  - Locating contamination (EPA Triad Approach)
  - Locating UXO
  - Emergency response
- Decision makers may be disparate
  - GIS over the Web
  - Acquire, process, interpret, decide, and act

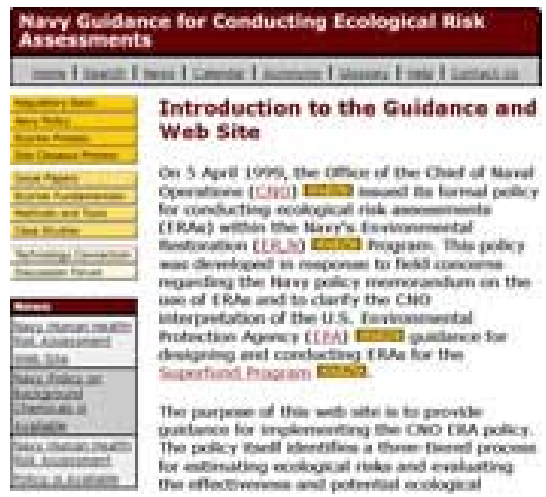
Real-time gamma scans in the field coupled with GPS systems fed contamination and spatial location data for GIS-based analysis at FUSRAP site to determine excavation footprints.



The Future

- Advances in GPS, sensors, wireless technologies, etc. will make spatial data more abundant
- Presently, compatibility issues associated with differing sources of spatial data are a problem! XML may help
- Knowledge management has a strong spatial component
- More Web access





Join the Subcommittee

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